

The Barrier Beach At Duxbury

Barrier beaches are built from sand and gravel transported by waves from a sediment source. They typically begin as sand spits that grow out from and parallel to the shore. Barrier beaches become islands when their connection to the shore has been breached by storm waves. Barrier islands and beaches are usually long and narrow and may have low elevations barely above high tide level or may contain high dunes.

Seen in cross section from the open sea to land, barrier beaches are composed of 4 major

elements: a sand beach made up of an intertidal shoreface zone, a foreshore beach and a steep berm; dunes; a shallow sloping zone usually containing salt marsh; and a lagoon or salt pond separating the beach from the mainland. Ecosystem components that typically may be found are salt marsh, tidal flats, and sand dunes. On larger more developed barrier beaches stands of maritime forest can be found.

Major examples of barrier islands-beaches in Massachusetts include Duxbury Beach.

Barrier beach systems, like

sandy shores and dunes of the mainland are subjected to the erosional stresses of storm waves and winds. Because they are composed of materials that are easily eroded and transported by wave and littoral drift, their beach area and contours often change dramatically during and following stormy periods.

Washover is a very important event for the barrier island system. This occurs when heavy storms drive the sea across the island from foreshore to the marsh or lagoon. It is by this means that sand is carried up on and over the barrier above the high tide level. Washovers also carry sand from the barrier beach to the lagoon to create shoals and deltas. Where such washover deposits are placed on old salt marsh, dunes may form on them. Where deposits occur in the lagoon new salt marsh may form. While there is some loss of communities that are buried by the washover deposits, new communities arise to replace them and overall this process results in

the slow migration of the barrier beach system toward the mainland.

Major human stress factors on barrier beaches are much the same as those affecting beach and dune environments. Many of the State's important barrier beaches and islands have been publicly acquired and now receive protection from most destructive forms of human use. Plum Island and Monomoy Island are National Wildlife Refuges. The National Park Service owns Coast Guard Beach and Jeremy Point. Horse Neck Beach is owned by the State, and several important beaches such as Sandy Neck, and Nauset are town-owned and protected. Public control of these and others has provided for reductions in such destructive uses as indiscriminate vehicle travel, disturbance of bird nesting areas and excessive concentrations of recreation activities.

The coast from Marshfield south, around the inshore of the Cape to Provincetown and down the outer cape to Chatham is an extensive coastal area still rich in natural and productive ecosystems.

Major barrier beaches at Duxbury, Barnstable, Wellfleet, Eastham, and Orleans protect valuable tidal flats, marshes and salt pond. Glacial material is abundant and has given rise to many beaches and their resultant dune systems. Maritime forest covers large portions of the coastal landscape. Commercial and sport fishing remain active and the tidal flats offer clams.